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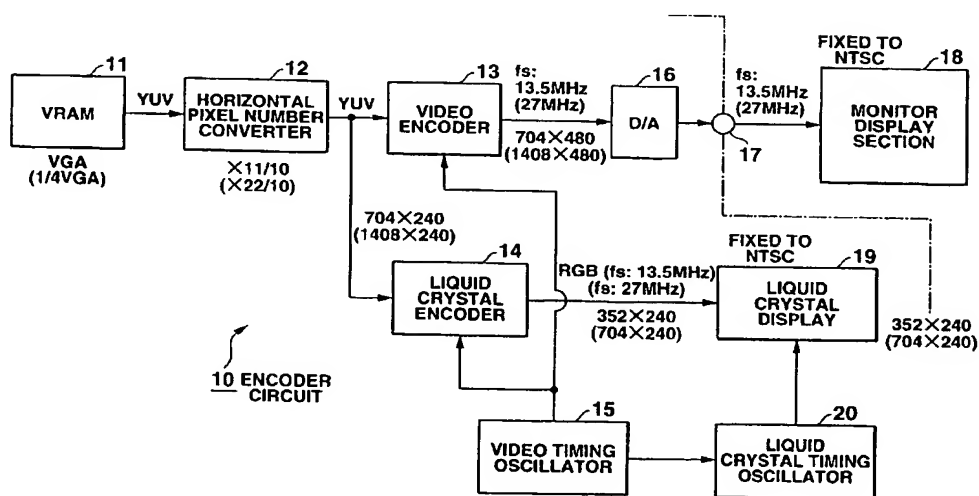
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[Continued on next page]

(54) Title: IMAGE SIGNAL GENERATION UNIT, DIGITAL CAMERA, AND IMAGE SIGNAL GENERATION METHOD



(57) Abstract: An image signal generation unit comprises a horizontal pixel number conversion unit (12) for performing the conversion of horizontal direction pixels corresponding to horizontal scanning period of NTSC system, for digital image data of the chrominance difference having the picture element number configuration based on the VGA standard, and a liquid crystal encoder (14) for generating the primary color group digital image data RGB from digital image data YUV processed by the horizontal pixel number conversion unit (12), and output them directly on a liquid crystal display (19).



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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INTERNATIONAL SEARCH REPORT

International Application No.

JP 03/15013

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N7/01 H04N5/232

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, COMPENDEX, INSPEC, PAJ, IBM-TDB, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2001/006579 A1 (YATSUGI TOMISHIGE ET AL) 5 July 2001 (2001-07-05)	1-6, 15, 25, 27, 29, 31
Y	paragraphs '0001!', '0002!', '0010!', '0011!', '0031!'-'0033!', '0040!', '0045!', '0048!', '0077!' figures 4,5	7-9, 11-14, 16-24, 26, 28, 30, 32
A	---	10
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document: not published on or after the international filing date

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O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

Date of the actual completion of the international search

9 June 2004

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INTERNATIONAL SEARCH REPORT

International Application No.

JP 03/15013

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>WO 01/91102 A (ADVANCED MICRO DEVICES INC) 29 November 2001 (2001-11-29)</p> <p>abstract * page 5, last 2 paragraphs * figure 4</p>	<p>7-9, 11-14, 16-24, 26,28, 30,32</p>
A	<p>US 6 480 230 B1 (HONMA YOSHIHIRO) 12 November 2002 (2002-11-12) column 1, line 5 -column 3, line 43 column 10, line 27 - line 29 column 4, line 65 -column 6, line 12 column 9, line 60 -column 10, line 30 figures 1,5-9</p>	<p>8-11,15, 23,24</p>
A	<p>EP 0 975 155 A (SONY CORP) 26 January 2000 (2000-01-26)</p> <p>abstract paragraphs '0008!', '0012!', '0037!', '0043!', '0044!', '0048!- '0051!', '0061!-'0063!', '0068!', '0069!', '0090!', '0107! paragraphs '0108!', '0130! figures 3,4</p>	<p>12-14, 17-23, 28,30,32</p>
A	<p>IMAIDE T ET AL: "A MULTIMEDIA COLOR CAMERA PROVIDING MULTI-FORMAT DIGITAL IMAGES" IEEE TRANSACTIONS ON CONSUMER ELECTRONICS, IEEE INC. NEW YORK, US, vol. 39, no. 3, 1 August 1993 (1993-08-01), pages 467-472, XP000396320 ISSN: 0098-3063 * Section Introduction * * Section Flexible Image Formats * * Section Developed Video Camera * figures 1,3,6,10</p>	<p>8-11,15, 24</p>
A	<p>US 5 657 082 A (YAMADA EIJI ET AL) 12 August 1997 (1997-08-12) abstract column 2, line 44 - line 60 column 5, line 22 - line 34 column 12, line 60 - line 64 figures 1,2,12-14</p>	<p>8-11,15, 24</p>

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INTERNATIONAL SEARCH REPORT

International Application No

JP 03/15013

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>VESA: "VESA Plug and Display Standard Version 1.0" VESA PLUG AND DISPLAY STANDARD VERSION 1.0, 11 June 1997 (1997-06-11), XP002123075 Retrieved from the Internet: <URL:http://www.vesa.org> 'retrieved on 1999-11-10! page 31 page 32 page 41 figures 5-1,5-5 tables 5-8,5-9,5-10</p> <p>---</p>	7,16
A	<p>US 6 144 411 A (KOBAYASHI TAKASHI ET AL) 7 November 2000 (2000-11-07)</p> <p>abstract column 3, line 13 - line 22 column 6, line 24 - line 52 column 7, line 26 - line 49 figure 1</p> <p>---</p>	1-7,16, 25,27, 29,31
A	<p>EP 1 175 101 A (TEXAS INSTRUMENTS INC) 23 January 2002 (2002-01-23)</p> <p>abstract paragraphs '0006!,'0008!-'0010!,'0020!,'0036!,'0044!, '0049!,'0051!,'0060! figures 1A,1B,2,3A,4,5,6</p> <p>---</p>	7,12-14, 16-23, 26,28, 30,32
A	<p>US 2002/008760 A1 (NAKAMURA KENJI) 24 January 2002 (2002-01-24)</p> <p>abstract paragraphs '0025!,'0042!,'0046!,'0050!,'0056! figures 4,5,9,10</p> <p>---</p>	1-6,25, 27,29,31
A	<p>WEN-HSIN CHAN ET AL: "VIDEO CCD BASED PORTABLE DIGITAL STILL CAMERA" IEEE TRANSACTIONS ON CONSUMER ELECTRONICS, IEEE INC. NEW YORK, US, vol. 41, no. 3, 1 August 1995 (1995-08-01), pages 455-459, XP000539491 ISSN: 0098-3063 abstract page 455 -page 456 figures 1,2</p> <p>-----</p>	1-6,25, 27,29,31

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP 03/15013

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-6,25,27,29,31

Horizontal pixel number of the display panel is approximately equal to the horizontal pixel number, or half of the number thereof, suitable for the generation of the video signals for the first television system

2. Claims: 7,16

Reduction of complexity for the transfer of image data to the display

3. Claims: 8-11,15,24

2 horizontal pixel number conversion means

4. Claims: 12-14,17-23,26,28,30,32

Usage of video memory

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

/JP 03/15013

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 2001006579	A1	05-07-2001	JP	10004535 A	06-01-1998
			EP	0802688 A2	22-10-1997
			US	6226449 B1	01-05-2001
WO 0191102	A	29-11-2001	CN	1430775 T	16-07-2003
			EP	1285429 A1	26-02-2003
			JP	2003534575 T	18-11-2003
			WO	0191102 A1	29-11-2001
US 6480230	B1	12-11-2002	JP	11317893 A	16-11-1999
			US	2002196349 A1	26-12-2002
EP 0975155	A	26-01-2000	JP	2000092361 A	31-03-2000
			EP	0975155 A2	26-01-2000
			US	6639627 B1	28-10-2003
US 5657082	A	12-08-1997	JP	3164481 B2	08-05-2001
			JP	8172636 A	02-07-1996
US 6144411	A	07-11-2000	JP	9284619 A	31-10-1997
			JP	9298715 A	18-11-1997
			US	6323906 B1	27-11-2001
EP 1175101	A	23-01-2002	EP	1175101 A1	23-01-2002
			US	2002041761 A1	11-04-2002
			JP	2002247592 A	30-08-2002
US 2002008760	A1	24-01-2002	JP	2001275029 A	05-10-2001